OFFICE OF	MODIF	/AR	-	V	875 No	ጋBY: of Naval Re rth Randolph ton, VA 2220	n Street	
MANA	1. INSTRUMENT TYPE: Grant				3b. CFDA: 12.3	00		
AL RESEAU	2. AUTHORITY:				3c, DUNS			
4, AWARD NO.:	10 USC 2358, 3		6304 DIFICATION TY	/DE-	7. PR NO.:			1
N00014-10-1-0084	5, WODIFICATION NO	is Mot Net		re.		02158-00		
8. ACTIVITY/AGENCY PROPOSAL NO.: N/A	9. RECIPIENT PROPOS 110-0304R1	AL NO.:	10. PROPOS.		TE: 11. A	CTIVITY TYPE:	12. PROGR onr	AM TYPE:
13. ISSUED TO 13b. CAGE: 13c.	EDI/EFT NUMBER:		TTANCE ADD	RESS (ENT FROM BLOC		
	LO8AB	Sam	e as bloc	ck #1	.3			
UNIVERSITY OF MASSACHUSET OFFICE OF GRANT AND CONTR ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333						·		
13d. BUSINESS OFFICE CONTACT: CAROL P SPRAGUE								•
13e, TELEPHONE NUMBER: 13f, EMAIL A	DDRESS:	,						
15. RESEARCH TITLE AND/OR DESCRIPTION Mechanisms for electron to				acti	ive bio	films		
16. FUNDING ACTIVIT	TY/AGENCY SHARE REC	CIPIENT SH	ARE		TOTA	AL 17. CURREN	T FUNDING PER	IOD
PREVIOUSLY OBLIGATED:	\$.00	\$.00		\$.0	0	N/A THROUGH	
OBLIGATED BY THIS ACTION:	\$154,556.70	Ś	.00	\$154	1,556.7	٥	N/A	
TOTAL OBLIGATED ON AWARD:	\$154,556.70		.00	•	1,556.7		OF PERFORMAN	ICF
FUTURE FUNDING:	•	•		-	•	-	01-JAN-10	
TOTOLET ONSING.	\$466,951.57	នុ	.00 *	\$46 6	5,951.5	7	THROUGH 31-DEC-12	
GRANT TOTAL:	\$621,508.27	\$.00	\$621	1,508.2	7		
19. ACCOUNTING AND APPROPRIATION D See attached Financial Acc	ATA: counting Data Sheet	: (a)						
20a. PRINCIPAL INVESTIGATOR/RECIPIEN TECHNICAL REPRESENTATIVE:	Т	21. TECH	NICAL REPRE ^{E:} Linda <i>I</i>	SENTA	TIVE		21b. CODE:	
DEREK R LOVLEY		21c. ADDF	RESS:	A. Ci	nrisey		ONR 34	:1
		875 N	e of Nava orth Rand gton, VA	dolph	n Stree			,
20b. TELEPHONE NUMBER: 20c. EMAIL A	DDRESS:	21d. TELE	PHONE NUME	BER:		21e. EMAIL A	DDRESS:	
	erobio.umass.edu		696-450			CHRISEL@ONR		
22. AWARDING OFFICE CONTACT 22a. NAME: Carol A. Porter	22b. CODE: ONR BD025	23a. ADMI	NISTRATIVE (OFFICE	:		23b. CODE: N6287	9
22c. ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995 22d. TELEPHONE NUMBER: 22e. EMAIL A	.DDRESS:	495 S BOSTO PHONE	EG BOSTO UMMER STI N, MA 02: :: (617) ' (617) 75:	REET 210-2 753-3	ROOM 6 2109 3283	27		
(703) 696-2587 PORTERCION 24. SUBMIT PAYMENT REQUEST TO:	R. NAVY .MIL 25a. PAYING OFFICE:	25b. CODE	z.	1-	26a, PATEN	IT OFFICE:	26b. CODE:	
Same as block #23a	DFAS COLUMB-NAVY COLUMBUS, OH 4323	ACQ HQ	251		Office of ATTN: Of One Libo 875 North	of Naval Res	N0001 earch Street, Sui	

AWARD NO.	AWARD/MODIFICATION	NC	MODIFICATION NO.	
N00014-10-1-0084 27. SPECIAL INSTRUCTIONS:			1	
See "Special Requirements" Att	tachment			
28. DELEGATIONS: The administration duties listed	I below have been delegated to the administrative	e office (b	block 23a). Upon request the awarding	office contact (block 22)
will make their full text available. Please direct quest	iona to the contents @:	•	.mil/02/024/offices.as	
Full Delegation				
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29. TERMS AND CONDITIONS: The following terms Upon request the awarding office contact named in the				ere given in full text.
DOCUMENT	URI	L	-	
UAAC Acceptance C November 2003 Agency Specific April 2009			nttp://www.onr.navy.mil/C submit-proposal/grants-pr	
UAWA Award A November 2003			onditions.aspx	oposar/granca-
Core July 2008			nttp://www.onr.navy.mil/C submit-proposal/grants-pr	
			onditions.aspx	oposar/grants-
	<p:< td=""><td>> <u>h</u></td><td>http://www.onr.navy.mil/C submit-proposal/grants-pro</td><td>ontracts-</td></p:<>	> <u>h</u>	http://www.onr.navy.mil/C submit-proposal/grants-pro	ontracts-
	tes	rms-co	onditions.aspx	oposar/grancs-
30, OPTIONS OPTION NO.	AMOUNT		PERIOD	
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(1) (2) (3)		•		
(4)				
31. REPORTS: The following reports must be submitthe project. Final Technical Reports must have a SF.	298, Report Documentation Page, accompanying	quantitle them. U	s, within 90 days following the expirati inless otherwise stated in the award/m	on or termination of odification, complete
Block 12a of the SF298 as follows: "Approved for Pu				COPIES
ADDRESSEE	REPORT TYPE			
See block #21 (Frequency)	Final Technical Repo		th SF298 ort (As Required) with	1 1
	SF298	r	, , , , , , , , , , , , , , , , , , ,	-
g 17 1 Box	Penart of Intentions	and	Subcontracts - DD 882	
See block #23a			Transmittal Letter onl	-y 1
	Performance/Technica			1
	Final Federal Finance Including Line Item		tatus Report - SF425 -	1
			II amono	
Defense Technical Information 8725 John J Kingman Road Ste 0			tn SF298 ort (As Required) with	$\begin{bmatrix} 1 \\ 1 \end{bmatrix}$
Fort Belvoir, VA 22060-6218	SF298	<i>P</i>	,,,,,	
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See block #26a	Report of Inventions	and :	Subcontracts - DD 882	1
BEC BIOCK #200	Report of inventions	circi .	Daniel acet DD 002	_
	·			
Naval Research Laboratory	Final Technical Repo	rt		1
ATTN: CODE 5596			ort (As Required) with	
4555 Overlook Avenue SW	SF298			
Washington, DC 20375-5320				
32, FOR THE RECIPIENT	33. FOR THE	UNITED	STATES OF AMERICA	
32a, SIGNATURE OF PERSON AUTHORIZED TO S		JRE OF	AWARDING OFFICER	-
N/A - SIGNATURE NOT REQUIRED	ON THIS AWARD (b) (6)			
32b. NAME AND TITLE OF SIGNER	32c. DATE SIGNED 33b. NAME AN		OF AWARD OFFICER	33c. DATE SIGNED

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				TO COMPTROLLER, ONR CONTRACT REVIEWED
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2. SPIIN (CRITICAL) 3. MOD (CRITICAL) 4. PR NUMBER 1. OPR02158-00	ACCOUNTING CITATION	This page is intentionally blank	PAGE TOTAL.	COMPTROLLER APPROVAL: FOR FISCAL DATA AND SIGNATURE BY DATE:
NUMBER(C	6. ACRN 7. (CRITICAL)			PREPARED/AUTHORIZED BY: DATE:
1. CONTR NO0014-	5, CLIN/SLIN			PREPARED/AI

AWARD NO. N00014-10-1-0084	SPECIAL	REQUIREMENTS	MODIFICATION NO.	
"This grant is funded with Fiscal Year 2010 be 8101 of the Department of Defense Appropria may not exceed 35% of the total funds provid	ations Act, 2010, (P.L.	111-118). Payment of indirect costs for		
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AWARD/

3a. ISSUED BY: Office of Naval Research 875 North Randolph Street

Arlington, VA 22203-1995 MODIFICATION 3b. CFDA: 12.300 Grant 3c. DUNS NUMBER: 2. AUTHORITY: 10 USC 2358, 31 USC 6304 6. MODIFICATION TYPE: 4. AWARD NO.: 5. MODIFICATION NO.: 7. PR NO : N00014-10-1-0084 13PR02202-00 P00008 Increment 11. ACTIVITY TYPE: 12, PROGRAM TYPE: 10, PROPOSAL DATE: 9. RECIPIENT PROPOSAL NO.: 8. ACTIVITY/AGENCY PROPOSAL NO.: 110-0304R1 17-SEP-09 N/A 14. REMITTANCE ADDRESS (IF DIFFERENT FROM BLOCK 13): 13c, EDI/EFT NUMBER: 13, ISSUED TO 13b. CAGE: Same as block #13 13a. ADDRESS: 7108AB 1KVP4 UNIVERSITY OF MASSACHUSETTS AMHERST OFFICE OF GRANT AND CONTRACT ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333 13d, BUSINESS OFFICE CONTACT: CAROL P SPRAGUE 13e, TELEPHONE NUMBER: 13f, EMAIL ADDRESS: () 15. RESEARCH TITLE AND/OR DESCRIPTION OF PROJECT AND/OR PROPOSAL TITLE: Mechanisms for electron transfer through electrochemically active biofilms 17. CURRENT FUNDING PERIOD TOTAL ACTIVITY/AGENCY SHARE RECIPIENT SHARE 16. FUNDING N/A THROUGH \$.00 \$569,989.37 \$569,989.37 PREVIOUSLY OBLIGATED: N/A \$.00 \$51,518.90 OBLIGATED BY THIS ACTION: \$51,518.90 18. PERIOD OF PERFORMANCE TOTAL OBLIGATED ON AWARD: \$621,508.27 \$621,508.27 \$.00 01-JAN-10 THROUGH FUTURE FUNDING: \$.00 \$.00 \$.00 31-DEC-12 GRANT TOTAL: \$621,508.27 \$.00 \$621,508.27 19. ACCOUNTING AND APPROPRIATION DATA: See attached Financial Accounting Data Sheet (s) 21. TECHNICAL REPRESENTATIVE 21b. CODE: 20a. PRINCIPAL INVESTIGATOR/RECIPIENT 21a. NAME: Linda A. Chrisey TECHNICAL REPRESENTATIVE: ONR 342 DEREK R LOVLEY 21c, ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995 21e EMAIL ADDRESS: 21d. TELEPHONE NUMBER: 20b. TELEPHONE NUMBER: | 20c. EMAIL ADDRESS: (413) 5459651 CHRISEL@ONR.NAVY.MIL dlovlev@microbio.umass.edu (703) 696-4504 23b, CODE: 22, AWARDING OFFICE CONTACT 22b. CODE: 23a. ADMINISTRATIVE OFFICE: 22a. NAME: Carol A. Porter N62879 ONR BD025 22c, ADDRESS: Office of Naval Research ONR REG BOSTON N62879 495 SUMMER STREET ROOM 627 875 North Randolph Street BOSTON, MA 02210-2109 Arlington, VA 22203-1995 PHONE: (617) 753-3283 FAX: (617) 753-4605 22d. TELEPHONE NUMBER: 22e. EMAIL ADDRESS: PORTERC@ONR.NAVY.MIL (703) 696-2587 26b, CODE: 25a, PAYING OFFICE: 25b. CODE: 26a. PATENT OFFICE: 24. SUBMIT PAYMENT REQUEST TO: N00014 HO0251 Same as block #23a Office of Naval Research DFAS COLUMB-NAVY ACQ HQ0251 ATTN: ONR BDCC COLUMBUS, OH 43213 One Liberty Center 875 North Randolph Street, Suite 1425 Arlington, VA 22203-1995

AWARD NO.	AWA	RD/MODI	FICATION	MODIFICATION NO. P00008	
N00014-10-1-0084 27. SPECIAL INSTRUCTIONS:				1 100008	
See "Special Requirements" At	tachment	-			
See agreement and quantum contents					
28. DELEGATIONS: The administration duties liste			e administrative office (b	lock 23a). Upon request the awarding	g office contact (block 22)
will make their full text available. Please direct ques	Stions to the c	ontacts @: http:/	/www.onr.navy.mil	/Contracts-Grants/Regiona	1-Contacts.aspx
Full Delegation					
				•	•
29, TERMS AND CONDITIONS: The following term	s and condition	ons are incorporated	herein by reference with	the same force and effect as if they	vere given in full text.
Upon request the awarding office contact named in	block 22 will	make their full text av	allable, or they can be fo	ound as described below,	
DOCUMENT The following documents may be for	und at:				
http://www.onr.navy.mil/Contracts		ubmit-proposa	l/grants-proposa	l/grants-terms-condition	.s.aspx
UAAC Acceptance C November 2003					
Agency Specific February 2011					
UAWA Award A November 2003 Core June 2011					
core June 2011		•			
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30, OPTIONS OPTION NO.		AMOUNT		PERIOD	
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(4) 31. REPORTS: The following reports must be subm	sitted to the in	dicated addressess i	in the indicated quantities	within 90 days following the evniral	tion or termination of
the project. Final Technical Reports must have a SF					
Block 12a of the SF298 as follows: "Approved for P	ublic Release		ted".		
ADDRESSEE		REPORT TYPE			COPIES
See block #21		Final Techn	ical Report wit	th SF298	1
3			earch Performan	nce Report (As Require	ed) 1
		with SF298			
ger block #220		Penort of T	nventions and 9	Subcontracts - DD 882	1
See block #23a		Final Techn		Jubconcraces - DD 002	
				nce Report (As Require	
				tatus Report - SF425	- 1
		Including L	ine Item 11		
Defense Technical Information			ical Report wit		1
8725 John J Kingman Road Ste (944		earch Performan	ice Report (As Require	ed) 1
Fort Belvoir, VA 22060-6218		with SF298			Ì
See block #26a		Report of Ir	nventions and S	Subcontracts - DD 882	1
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Naval Research Laboratory ATTN: CODE 5596		Final Techni Interim Rese		nce Report (As Require	1 ∋d) 1
4555 Overlook Avenue SW		with SF298	Joseph Lorrorman	in rederic	
Washington, DC 20375-5320					·
32. FOR THE RECIPIENT	NOW.		33, FOR THE UNITED S		
32a. SIGNATURE OF PERSON AUTHORIZED TO	aign .		33a. SIGNATURE OF A	WARDING OFFICER	
N/A - SIGNATURE NOT REQUIRE	D ON THIS	AWARD	(b) (6)		
32b. NAME AND TITLE OF SIGNER	32	c. DATE SIGNED	33b. NAME AND TITLE		33c. DATE SIGNED
			Ellen Simonof	£	27-NOV-12

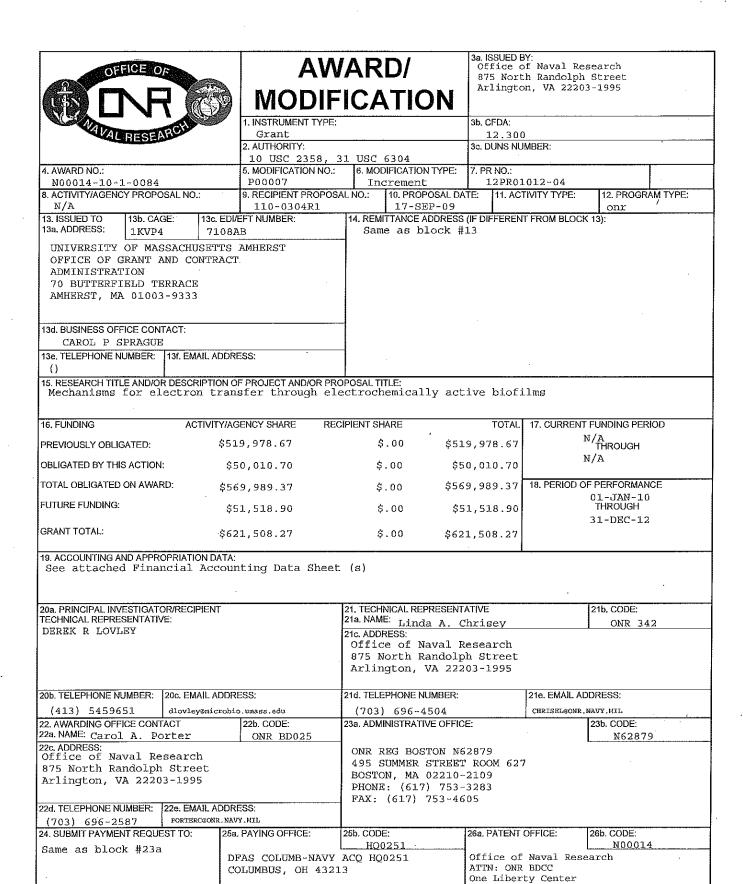
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			NAVY INTERNAL. USE ONLY REF DOC/ACRN	PR#13PR02202-00 FRC:4512		for COMPTROLLER, ONR CONTRACT REVIEWED
			AMOUNT (CRITICAL)	\$51,518.90	\$51,518.90	for COMPTROLLE
4. PR NUMBER	13PR02202-00	7.	K. COST CODE	0000 00000 00000 00000 00000 00000	GRAND TOTAL	
3. MOD (CRITICAL) 4. PR.N	P00008 13		G. H. I. J. RFM SA AAA IT PAA (CRITICAL)	349 0 068342 2D 000500		COMPTROLLER APPROVAL: FOR FISCAL DATA AND SIGNATURE BY DATE:
2. SPIIN (CRITICAL) 3.			C. B. E. SUBHEAD OBJ PARM (CRITICAL)	MIRE 410 RA)
1. CONTRACT NUMBER (CRITICAL)	N00014-10-1-0084	1	CLIN/SLIN A. B. APPROPRIATION (CRITICAL) (CRITICAL)	AD 1731319	·	PREPAREDIAUTORIZED 8Y: DATE:

- 1000	NAVY INTERNAL USE ONLY REF DOC/ACRN			REVIEWED
eauwujuda.			00	for COMPTROLLER, ONR CONTRACT REVIEWED
	AMOUNT (CRITICAL)		\$ 00.8	for COMPTROLL
4. PR NUMBER 1.3 P.R.02202-00	æ	intentionally blank	PAGE TOTAL CERAIN TOTAL	COMPTROLLER APPROVAL: FOR FISCAL DATA AND SIGNATURE BY DATE:
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2. SPIIN (CRITICAL)		다 다		THOUSAND PARTY OF
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875 North Randolph Street, Suite 1425

Arlington, VA 22203-1995

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AWARD NO.	AWA	RD/MODIF	FICATION	MODIFICATION NO. P00007	
N00014-10-1-0084 27, SPECIAL INSTRUCTIONS:				P00007	
27. SPECIAL INSTRUCTIONS: See "Special Requirements" At:	taabmant				
see "special kequirements Ac	cacimient		•		
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28. DELEGATIONS: The administration duties listed	d below have	seen delegated to the	administrative office (b	lock 23a). Upon request the awarding	office contact (block 22)
will make their full text available. Please direct ques	tions to the co	ntacte @:		/Contracts-Grants/Regional	
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Full Delegation	**				
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29. TERMS AND CONDITIONS: The following term Upon request the awarding office contact named in	s and condition	ns are incorporated to	nerein by reference with	the same force and effect as if they w	ere given in full text.
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The following documents may be for	und at:				
http://www.onr.navy.mil/Contracts	-Grants/s	ubmit-proposal	/grants-proposa	1/grants-terms-condition	s.aspx
UAAC Acceptance C November 2003					
Agency Specific February 2011					
UAWA Award A November 2003					
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24 DEDODTS: The following reports must be subm	itted to the inc	licated addressees, i	n the indicated quantitie	s, within 90 days following the expirat	ion or termination of
the project, Final Technical Reports must have a SF Block 12a of the SF298 as follows: "Approved for Pa	5298, Report € ublic Release	ocumentation Page, distribution is Unlimit	accompanying them. U	nless otherwise stated in the award/m	lodification, complete
ADDRESSEE		REPORT TYPE	,		COPIES
ADDRESSEE					
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		with SF298	earch Periorma	nce Report (As Require	30/ 1
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g - 11 - 1 #220		Report of I	ventions and	Subcontracts - DD 882	1
See block #23a		Final Techn:	ical Report		1
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See block #26a		Report of Ir	iventions and	Subcontracts - DD 882	1
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Washington, DC 20375-5320	٠				,
32. FOR THE RECIPIENT				STATES OF AMERICA	
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	10 USC 2358, 31				00. 00.110 110.	110		
4. AWARD NO.:	5. MODIFICATION NO.:		DIFICATION TY	PE:	7. PR NO.:	012-03		
N00014-10-1-0084 8 ACTIVITY/AGENCY PROPOSAL NO.:	P00006 9. RECIPIENT PROPOSAL		rement 10. PROPOSA	AL DAT		IVITY TYPE:	12, PROGR	AM TYPE:
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13. ISSUED TO 13b. CAGE: 13c. EI 13a. ADDRESS: 1KVP4 710			e as bloc			FROM BLOCK	13):	
UNIVERSITY OF MASSACHUSETT: OFFICE OF GRANT AND CONTRAC ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333	S AMHERST							
13d. BUSINESS OFFICE CONTACT: CAROL P SPRAGUE								
13e, TELEPHONE NUMBER: 13f, EMAIL ADD	DRESS:					•	•	
15. RESEARCH TITLE AND/OR DESCRIPTION Mechanisms for electron tra	OF PROJECT AND/OR PROF ansfer through elec	POSALTI ctrock	TLE: nemically	act:	ive biofi	lms		
16. FUNDING ACTIVITY	AGENCY SHARE RECI	PIENT SH	ARE		TOTAL	17. CURRENT		RIOD
PREVIOUSLY OBLIGATED: \$	469,967.98	ģ	5.00	\$469	9,967.98		/A THROUGH :/A	•
OBLIGATED BY THIS ACTION:	\$50,010.69	\$.00	\$50	0,010.69			
TOTAL OBLIGATED ON AWARD: \$	519,978.67	. \$.00	\$519	9,978.67	18, PERIOD OF	01-JAN-10	
FUTURE FUNDING: \$	101,529.60	\$	5.00	\$10	1,529.60	•	THROUGH 31-DEC-12	2
GRANT TOTAL: \$	621,508.27	\$	5.00	\$62	1,508.27			
19. ACCOUNTING AND APPROPRIATION DAT See attached Financial Acco	ounting Data Sheet					uka		
20a, PRINCIPAL INVESTIGATOR/RECIPIENT TECHNICAL REPRESENTATIVE:		21. TECH 21a, NAM	NICAL REPRE ^{(E:} Linda	SENTA	ATIVE		21b. CODE: ONR 3	4.2
DEREK R LOVLEY		21c.ADD Offic 875 1		al R	esearch h Street		OM. 3	
20b. TELEPHONE NUMBER: 20c. EMAIL AD	DRESS:	21d. TEL	EPHONE NUM	BER:		21e. EMAIL AD		
	obio.umass.edu) 696-450 MINISTRATIVE		<u></u>	CHRISEL@ONR.1	JAVY.MIL 23b, CODE:	
22. AWARDING OFFICE CONTACT 22a. NAME: Carol A. Porter	22b. CODE: ONR BD025	Z38, ADN	HINDIKATIVE	UFFIC	i.		N6287	19
22c. ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995 22d. TELEPHONE NUMBER: 22e. EMAIL AD		495 BOST PHON	REG BOSTO SUMMER ST ON, MA 02 E: (617) (617) 75	REET 210- 753-	ROOM 62 2109 3283	7		٠
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AWARD NO.	AWA	RD/MODI	FICATION	MODIFICATION NO.	
N00014-10-1-0084 27. SPECIAL INSTRUCTIONS:				P00006	
See "Special Requirements" Att	tachment				
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28. DELEGATIONS: The administration duties listed will make their full text available. Please direct quest	I below have lions to the c	antanta (iii)		olock 23a). Upon request the awarding ./Contracts-Grants/Regiona	
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29. TERMS AND CONDITIONS: The following terms	s and condition	ons are incorporated	herein by reference with	the same force and effect as if they v	vere given in full text.
Upon request the awarding office contact named in I	block 22 will	make their full text av	allable, or they can be fo	ound as described below.	
DOCUMENT The following documents may be fou	und at ·		`		
http://www.onr.navy.mil/Contracts-	·Grants/s	ubmit-proposal	L/grants-proposa	1/grants-terms-condition	s.aspx
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30. OPTIONS OPTION NO.		AMOUNT		PERIOD	
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31. REPORTS: The following reports must be submit the project, Final Technical Reports must have a SF.	tted to the in	dicated addressees, i	n the indicated quantitie	s, within 90 days following the expirat	ion or termination of
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32, FOR THE RECIPIENT			33 FOR THE LIMITED	STATES OF AMERICA	
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32b, NAME AND TITLE OF SIGNER	3:	2c, DATE SIGNED		E OF AWARD OFFICER	33c, DATE SIGNED
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13d. BUSINESS OFFICE CON CAROL P SPRAGUI									,
13e, TELEPHONE NUMBER:	13f, EMAIL A	DDRESS:					•		•
15. RESEARCH TITLE AND/O	R DESCRIPTIO .ectron ti	DN OF PROJECT AND/OR PR ransfer through el	OPOSALT ectrocl	MTLE: nemically	act:	ive biof	ilms		
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OBLIGATED BY THIS ACTION	l:	\$50,010.69		5.00	\$50	0,010.69		N/A	
TOTAL OBLIGATED ON AWA	RD:	\$469,967.98	\$.00	\$469	9,967.98	18. PERIOD C	F PERFORMAN	CE
FUTURE FUNDING:		\$151,540.29	Ś	\$.00	\$15	1,540.29)	01-JAN-10 THROUGH 31-DEC-12	
GRANT TOTAL:		\$621,508.27		5.00	\$621	L,508.27			
19. ACCOUNTING AND APPR See attached Fina 20a. PRINCIPAL INVESTIGAT. TECHNICAL REPRESENTATION DEREK R LOVLEY	ncial Acc	counting Data Sheet	21. TECH 21a. NAM 21c. ADD Offic 875 1	TITION A	. Cl l Re	hrisey esearch n Street	:	21b. CODE: ONR 34	2
20b. TELEPHONE NUMBER:	20c. EMAIL AI			EPHONE NUMBI			21e. EMAIL AI		
(413) 5459651 22. AWARDING OFFICE CON	<u> </u>	robio.umass.edu 22b.CODE:) 696-4504 IINISTRATIVE O		<u> </u>	CHRISELSONR.	NAVY.MIL 23b. CODE:	
22a NAME: Carol A. Po		ONR BD025						N62879)
22c. ADDRESS: Office of Naval Re 875 North Randolph Arlington, VA 2220	n Street	NNDESS:	495 S BOSTO	REG BOSTON SUMMER STR ON, MA 022 E: (617) 7 (617) 753	EET 10-2 53-3	ROOM 62 2109 3283	27 ₆		
(703) 696-2587	PORTERCGONR								
24. SUBMIT PAYMENT REQUI		25a, PAYING OFFICE:	25b. COD		1	26a. PATEN	TOFFICE:	26b, CODE: N00014	
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27. SPECIAL INSTRUCTIONS:				•	
See "Special Requirements" Att	cachment	:			
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28. DELEGATIONS: The administration duties listed			ne administrative office (b	plock 23a). Upon request the awarding	g office contact (block 22)
will make their full text available. Please direct quest	ions to the c	ontacts @: http:/	/www.onr.navy.mi]	l/Contracts-Grants/Regiona	l-Contacts.aspx
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29. TERMS AND CONDITIONS: The following terms	and conditi	one are incorporated	harain by reference with	the come force and offeet on if they	uero diuen in full text
Upon request the awarding office contact named in b	lock 22 will	make their full text a	vailable, or they can be for	ound as described below.	
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30. OPTIONS OPTION NO.		AMOUNT		PERIOD	
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(4) 31. REPORTS: The following reports must be submit	ited to the in	dicated addressees	in the indicated quantitie	e within 60 days following the avairab	tion or termination of
the project. Final Technical Reports must have a SF2	298, Report	Documentation Page	, accompanying them. U		
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32b. NAME AND TITLE OF SIGNER	41	c. DATE SIGNED	33b. NAME AND TITLE	OF AWARD OFFICER	33c, DATE SIGNED
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8. ACTIVITY/AGENCY PROPOSAL NO.: N/A	9. RECIPIENT PROPOSA 110-0304R1	L NO.:	10. PROPOSAL DA 17-SEP-09	ATE: 11, AG	CTIVITY TYPE:	12. PROGRA	M TYPE:
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UNIVERSITY OF MASSACHUSET OFFICE OF GRANT AND CONTRA ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333	rs amherst	***************************************					
13d. BUSINESS OFFICE CONTACT:		1					
CAROL P SPRAGUE 13e. TELEPHONE NUMBER: 13f. EMAIL AL	NADECC.						
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15.RESEARCH TITLE AND/OR DESCRIPTION Mechanisms for electron tr	N OF PROJECT AND/OR PRO cansfer through ele	POSALTI ctroch	TLE: emically act	ive biof	ilms		
16. FUNDING ACTIVITY	Y/AGENCY SHARE RECI	IPIENT SH	ARE	TOTAL			OD
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OBLIGATED BY THIS ACTION:	\$8,001.71	\$.00 \$	8,001.71	N	I/A	
TOTAL OBLIGATED ON AWARD:	\$419,957.29	\$.00 \$41	19,957.29	18, PERIOD OF	PERFORMAN	CE
FUTURE FUNDING:	\$201,550.98	\$.00 \$20	01,550.98		01-JAN-10 THROUGH 31-DEC-12	
GRANT TOTAL:	\$621,508.27	\$.00 \$62	21,508.27	1		
19. ACCOUNTING AND APPROPRIATION DA See attached Financial Acc 20a, PRINCIPAL INVESTIGATOR/RECIPIENT TECHNICAL REPRESENTATIVE: DEREK R LOVLEY	ounting Data Sheet	21. TECHI 21a. NAMI 21c. ADDF Offic 875. N	NICAL REPRESENT E: Linda A. (RESS: e of Naval I orth Randoly gton, VA 222	Chrisey Research oh Street		21b. CODE: ONR 34	1
		*******	90011, 111 222	205 2555			:
20b. TELEPHONE NUMBER: 20c. EMAIL AL			PHONE NUMBER:		21e, EMAIL AD		
(413) 5459651 dlovley@micx 22. AWARDING OFFICE CONTACT	obio.umass.edu 22b. CODE:		696-4504 NISTRATIVE OFFICE	Œ:	CHRISEL@ONR.N	IAVY.MIL 23b. CODE:	
22a.NAME: Carol A. Porter	ONR BD025		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,		N62879)
22c. ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995 22d. TELEPHONE NUMBER: 22e. EMAIL AE		495 S BOSTO PHONE	EG BOSTON NO UMMER STREET N, MA 02210-1: (617) 753-46	T ROOM 62 -2109 -3283			
(703) 696-2587 PORTERCIONR 24. SUBMIT PAYMENT REQUEST TO:		25b. CODE		26a, PATENT	OFFICE:	26b. CODE;	
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N00014-10-1-0084 27. SPECIAL INSTRUCTIONS:			F00004	
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28. DELEGATIONS: The administration duties liste	d below have been delegated to the	he administrative office (l	olock 23a). Upon request the awarding	office contact (block 22)
will make their full text available. Please direct ques	tions to the contacts @r		l/Contracts-Grants/Regional	
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29. TERMS AND CONDITIONS: The following term	s and conditions are incorporated	herein by reference with	the same force and effect as if they v	vere given in full text.
Upon request the awarding office contact named in	block 22 will make their full text a	vailable, or they can be f	ound as described below.	
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31, REPORTS: The following reports must be subm	itted to the indicated addressees,	in the indicated quantitie	s, within 90 days following the expirat	ion or termination of
the project, Final Technical Reports must have a SF	298, Report Documentation Page	e, accompanying them. U	nless otherwise stated in the award/m	odification, complete
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Washington, DC 20375-5320			•	
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32. FOR THE RECIPIENT		33, FOR THE UNITED	STATES OF AMERICA	· · · · · · · · · · · · · · · · · · ·
32a. SIGNATURE OF PERSON AUTHORIZED TO	SIGN		AWARDING OFFICER	
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32b. NAME AND TITLE OF SIGNER	32c. DATE SIGNED	· B	OF AWARD OFFICER	33c, DATE SIGNED
		Ellen Simono:	f f	13-OCT-11

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AWARD NO.	SPECIAL REQUIREMENTS	MODIFICATION NO.	
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	1. INSTRUMENT TYPE:				3b. CFDA:			
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4. AWARD NO.: N00014~10-1-0084	5, MODIFICATION NO.: P00003	1	DIFICATION TY crement	PE:	7. PR NO.: 12PR01	1012-01		•
8. ACTIVITY/AGENCY PROPOSAL NO.: N/A	9. RECIPIENT PROPOSAL 110-0304R1	L NO,:	10. PROPOSA		E: 11. AC	TIVITY TYPE:	12, PROGR	AM TYPE:
13. ISSUED TO 13b. CAGE: 13c. E	EDI/EFT NUMBER:			RESS (I		T FROM BLOCK	13):	
13a ADDRESS: 1KVP4 710 UNIVERSITY OF MASSACHUSETT OFFICE OF GRANT AND CONTRA ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333		Salli	e as bloc	.W. #I				
13d. BUSINESS OFFICE CONTACT: CAROL P SPRAGUE								
13e. TELEPHONE NUMBER: 13f. EMAIL AD	DRESS:			•				
15. RESEARCH TITLE AND/OR DESCRIPTION Mechanisms for electron tr	N OF PROJECT AND/OR PRO ansfer through ele	POSAL TI ctrock	TLE: nemically	acti	ve biof:	ilms		
16. FUNDING ACTIVITY	Y/AGENCY SHARE RECI	IPIENT SI	HARE.		TOTAL	17. CURRENT	FUNDING PER	RIOD
	\$361,944.89		5.00	\$361	,944.89		I/A THROUGH	
OBLIGATED BY THIS ACTION:	\$50,010.69		.00	·	0,010.69	1	N/A	•
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	\$411,955.58	•	.00	·		10.1 2.1000	01-JAN-10 THROUGH	
FUTURE FUNDING:	\$209,552.69	Ş	3.00	\$209	9,552.69		31-DEC-12	2
GRANT TOTAL:	\$621,508.27	Ş	5.00	\$621	,508.27			
19. ACCOUNTING AND APPROPRIATION DA See attached Financial Acc	ounting Data Sheet							
20a. PRINCIPAL INVESTIGATOR/RECIPIENT TECHNICAL REPRESENTATIVE:			NICAL REPRE ^{NE:} Lin <u>da</u>				21b. CODE: ONR 34	1 7
DEREK R LOVLEY		21c.ADD Offic 875 1		al Re dolph	esearch n Street		OIA S	
20b. TELEPHONE NUMBER: 20c. EMAIL AL	ODRESS:	21d. TELI	EPHONE NUM	BER:		21e. EMAJL AL		
(123)	robio.umass.edu 22b. CODE:) 696-450 IINISTRATIVE		<u>.</u>	CHRISELSONR.	NAVY.MIL 23b, CODE:	
22. AWARDING OFFICE CONTACT 22a. NAME: Carol A. Porter	ONR BD025	ZUG, ADIV	IENOTIVE.		- .		N6287	9
22c. ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995 22d. TELEPHONE NUMBER: 22e. EMAIL AI	DDRESS:	495 S BOSTO PHONE	REG BOSTO SUMMER ST ON, MA 02 E: (617) (617) 75	REET 210-2 753-3	ROOM 62 2109 3283	7		
(703) 696-2587 PORTERCIONER 24. SUBMIT PAYMENT REQUEST TO:		25b. COD	DE:	- 1	26a. PATENT	OFFICE:	26b. CODE:	
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	DFAS COLUMB-NAVY COLUMBUS, OH 4321		00251		ATTN: ONL One Liber 875 North	f Naval Res R BDCC rty Center h Randolph n, VA 22203	Street, Su	ite 1425

AWARD NO.	A VAVA DD (MAOD	UELOATION	MODIFICATION NO.	
N00014-10-1-0084	AWARD/MOD	IFICATION	P00003	
27. SPECIAL INSTRUCTIONS:	-adhmont			
See "Special Requirements" Att	Lactiment			
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28. DELEGATIONS: The administration duties listed will make their full text available. Please direct quest			block 23a). Upon request the awarding 1/Contracts-Grants/Regional	
Full Delegation				
			₩.	
29. TERMS AND CONDITIONS: The following terms	s and conditions are incorporate	ed herein by reference with	h the same force and effect as if they w	vere given in full text.
Upon request the awarding office contact named in DOCUMENT	block 22 will make their full text	available, or they can be	found as described below.	
The following documents may be for http://www.onr.navy.mil/Contracts-	ind at:	al/grants-propos	al/grants-terms-condition	s aspx
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COLC OMIC ZOLL				
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30. OPTIONS OPTION NO.	AMOUN	Т	PERIOD	
(1) (2)				
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(4) 31. REPORTS: The following reports must be submi	tted to the indicated addressee	s in the indicated quantiti	es, within 90 days following the expirat	ion or termination of
the project, Final Technical Reports must have a SF Block 12a of the SF298 as follows: "Approved for Pu	298, Report Documentation Pa	ge, accompanying them. t	Inless otherwise stated in the award/m	nodification, complete
ADDRESSEE	REPORT TYPE	aniked .		COPIES
See block #21	Final Tech	nical Report w	ith SF298	1
bee brock #22	Interim Rewith SF298		ance Report (As Require	ed) 1
	WICH SF296	•		
See block #23a		Inventions and mical Report	Subcontracts - DD 882	1
	Interim Re	esearch Performa	ance Report (As Require	ed) 1
		eral Financial 8 Line Item 11	Status Report - SF425	- 11
Defense Technical Information		nical Report wi	ith SF298	1 .
8725 John J Kingman Road Ste 0	944 Interim Re	search Performa	ance Report (As Require	ed) 1
Fort Belvoir, VA 22060-6218	with SF298	i		
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32. FOR THE RECIPIENT 32a, SIGNATURE OF PERSON AUTHORIZED TO	SIGN	Space -	O STATES OF AMERICA FAWARDING OFFICER	
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INA - SIGNATURE NOT REQUIRE	Z ON THIO AWAILD			
32b. NAME AND TITLE OF SIGNER	32c. DATE SIGNED	33b. NAME AND TITL	E OF AWARD OFFICER	33c, DATE SIGNED

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	2. AUTHORITY: 10 USC 2358, 3:	ı mec	C204	30	c. DUNS NUM	MBER:		
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N00014-10-1-0084	P00002		rement		11PR00			
8. ACTIVITY/AGENCY PROPOSAL NO.: N/A	9. RECIPIENT PROPOSAL 110-0304R1		10. PROPOSAL 17-SEP-0	9		IVITY TYPE:	12. PROGRA	AM TYPE:
	:DI/EFT NUMBER:) 8 AB		TTANCE ADDRI e as block			FROM BLOCK	13):	
13a.ADDRESS: 1KVP4 710 UNIVERSITY OF MASSACHUSETT OFFICE OF GRANT AND CONTRA ADMINISTRATION 70 BUTTERFIELD TERRACE AMHERST, MA 01003-9333	'S AMHERST							
13d, BUSINESS OFFICE CONTACT: CAROL P SPRAGUE	·							
13e. TELEPHONE NUMBER: 13f. EMAIL AD								
15.RESEARCH TITLE AND/OR DESCRIPTION Mechanisms for electron tr	N OF PROJECT AND/OR PRO ansfer through ele	POSAL TI ctroch	TLE: emically a	activ	ve biofi	lms		
16, FUNDING ACTIVITY	VAGENCY SHARE RECI	PIENT SF	IARE		TOTAL	17, CURRENT	FUNDING PER	IOD
	206,403.70	\$.00	\$206,	403.70	and the second s	I/A THROUGH	
OBLIGATED BY THIS ACTION: \$	3155,541.19	\$.00	\$155,	541.19	I	I/A	
TOTAL OBLIGATED ON AWARD:	361,944.89	\$.00	\$361,	944.89	18. PERIOD OI	PERFORMAN	
FUTURE FUNDING:	259,563.38	\$.00	\$259,	,563.38		THROUGH 31-DEC-12	
GRANT TOTAL:	621,508.27	\$.00	\$621,	508.27			
19. ACCOUNTING AND APPROPRIATION DA See attached Financial Acco	ounting Data Sheet							·
20a, PRINCIPAL INVESTIGATOR/RECIPIENT		21, TECH	NICAL REPRES	ENTAT	IVE .		21b. CODE:	
TECHNICAL REPRESENTATIVE: DEREK R LOVLEY		21c.ADD Offic 875 N	E: Linda A RESS: ce of Nava Jorth Rand ngton, VA	l Res	search Street		ONR 34	<u>1</u>
20b. TELEPHONE NUMBER: 20c. EMAIL AD	DRESS:	21d. TEL	EPHONE NUMBI	ER:		21e. EMAIL AD	DRESS:	
	obio.umass.edu	(703) 696-4504	Į		CHRISELSONR.	NAVY.HIL	
22. AWARDING OFFICE CONTACT 22a. NAME: Carol A. Porter	22b, CODE: ONR BD025		INISTRATIVE O				23b. CODE: N6287	9
22c. ADDRESS: Office of Naval Research 875 North Randolph Street Arlington, VA 22203-1995		495 S BOSTO PHONE	REG BOSTON SUMMER STR DN, MA 022 E: (617) 7 (617) 753	EET 1 10-2 53-3	ROOM 627 109 283	,		
22d. TELEPHONE NUMBER: 22e. EMAIL AD								
(703) 696-2587 PORTERCEONR.		25b. COD	E-	12	6a, PATENT	OFFICE:	26b, CODE:	
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AWARD NO.	AWA	RD/MODI	FICATION	MODIFICATION NO.	
N00014-10-1-0084 27 SPECIAL INSTRUCTIONS:				P00002	
27. SPECIAL INSTRUCTIONS: See "Special Requirements" Att	achment				
28. DELEGATIONS: The administration duties listed will make their full text available. Please direct questi	below have t ons to the co	ntaata @:		olock 23a). Upon request the awarding ./Contracts-Grants/Regional	
Full Delegation					
29. TERMS AND CONDITIONS: The following terms Upon request the awarding office contact named in b DOCUMENT	and condition lock 22 w謝 m	ns are incorporated nake their full text av	herein by reference with vailable, or they can be fo	the same force and effect as if they wound as described below.	vere given in full text.
The following documents may be four http://www.onr.navy.mil/Contracts-		ıbmit-proposa	l/grants-proposa	l/grants-terms-condition	s.aspx
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30. OPTIONS OPTION NO.		AMOUNT		PERIOD	
(1) (2) (3) (4)					
31. REPORTS: The following reports must be submitt the project. Final Technical Reports must have a SF2 Block 12a of the SF298 as follows: "Approved for Pub.	98, Report D	ocumentation Page	, accompanying them. U	s, within 90 days following the expirati nless otherwise stated in the award/m	on or termination of odification, complete
ADDRESSEE		REPORT TYPE			COPIES
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a 17 d Non		Donort of T	niterations and	Subcontracts - DD 882	,
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		Performance	/Technical Rep	ort (As Required)	1
		Final Feder Including L		tatus Report - SF425 -	1
Defense Technical Information 08725 John J Kingman Road Ste 08 Fort Belvoir, VA 22060-6218	944		ical Report wit Technical Repo	th SF298 ort (As Required) with	. 1
See block #26a		Report of I	nventions and s	Subcontracts - DD 882	1
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32a. SIGNATURE OF PERSON AUTHORIZED TO SI	IGN		33a, SIGNATURE OF A	WARDING OFFICER	
N/A - SIGNATURE NOT REQUIRED	ON THIS	AWARD	(b) (6)		
32b. NAME AND TITLE OF SIGNER	320	; DATE SIGNED	33b. NAME AND TITLE Ellen Simonof	OF AWARD OFFICER	33c, DATE SIGNED 15-FEB-11

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		2. AUTHORITY: 10 USC 2358, 31	l USC	6304		3c. DUNS N	IUMBER:		
4. AWARD NO.:		5. MODIFICATION NO.: P00001	6. MOI	DIFICATION TY	PE:	7. PR NO.:	00362-00		
N00014-10-1-0084 8. ACTIVITY/AGENCY PROPOS/	AL NO.	9. RECIPIENT PROPOSAL		10, PROPOSA			CTIVITY TYPE:	12. PROGRA	AM TYPE:
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UNIVERSITY OF MASS OFFICE OF GRANT AN ADMINISTRATION 70 BUTTERFIELD TER AMHERST, MA 01003-	D CONTRACT			,					
13d. BUSINESS OFFICE CONTA CAROL P SPRAGUE	ICT:	- "	,						
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() 15. RESEARCH TITLE AND/OR I	DESCRIPTION (DE PROJECT AND/OR PROF	POSAL T	ITLE:				 	
Mechanisms for ele	ctron tran	nsfer through elec	ctrock	nemically	act:	ive biof	Tilms		
16. FUNDING	ACTIVITY/A	GENCY SHARE RECI	PIENT SI	HARE		TOTA	1	FUNDING PER	IOD
PREVIOUSLY OBLIGATED:	\$1	54,556.70	\$	5.00	\$154	4,556.70	1	N/A THROUGH	
OBLIGATED BY THIS ACTION:	\$	51,847.00	\$.00	\$53	1,847.00		N/A	
TOTAL OBLIGATED ON AWARD): \$2	06,403.70	\$.00	\$206	6,403.70	18, PERIOD C	F PERFORMAN	
FUTURE FUNDING:	\$4	15,104.57	ę	5.00	\$41!	5,104.5	7	01-JAN-10 THROUGH	
GRANT TOTAL:	\$6	21,508.27	Ş	3.00	\$623	1,508.27	7	31-DEC-12	<u>.</u>
19. ACCOUNTING AND APPROF See attached Financ	cial Accou	inting Data Sheet						La de la conse	
20a. PRINCIPAL INVESTIGATOR TECHNICAL REPRESENTATIVE		- !	21, TECF 21a, NAM	INICAL REPRE ^{IE:} Linda I	SENIA A. C	\nv⊨ hrisev		21b, CODE: ONR 34	11
DEREK R LOVLEY			21c.ADD Offic 875 1		al Re	esearch h Stree!	i.		
20b. TELEPHONE NUMBER: 2	0c. EMAIL ADDI	RESS:	21d. TEL	EPHONE NUM	BER:		21e, EMAIL AI		
(413) 5459651 22, AWARDING OFFICE CONTA	dlovley@microb) 696-450 IINISTRATIVE		=-	CHRISELGONR	NAVY, MIL 23b. CODE:	
22a. NAME: Carol A. Por		ONR BD025	20a. ADI	III NOTIONITAL.	011101			N6287	9
22c.ADDRESS: Office of Naval Res 875 North Randolph Arlington, VA 22203	Street -1995		495 BOSTO PHON	REG BOSTO SUMMER ST ON, MA 02 E: (617) (617) 75	REET 210- 753-	ROOM 6: 2109 3283	27		
22d. TELEPHONE NUMBER: 2 (703) 696-2587	22e, EMAIL ADDI PORTERCEONR. NA								
24. SUBMIT PAYMENT REQUES	ST TO: 25	ia. PAYING OFFICE:	25b. COL			26a. PATEN	IT OFFICE:	26b. CODE: N0001	4
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AWARD NO.	AWA	RD/MODIF	FICATION	MODIFICATION NO. P00001	
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28. DELEGATIONS: The administration duties listed	d below have				
will make their full text available. Please direct ques	tions to the co	http://	www.onr.navy.mil	I/Contracts-Grants/Regional	-Contacts.aspx
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29. TERMS AND CONDITIONS: The following term	s and condition	ns are incorporated h	erein by reference with	the same force and effect as if they w	ere given in full text.
Upon request the awarding office contact named in	block 22 will r	nake their full text ava	ilable, or they can be f	ound as described below.	
DOCUMENT The following documents may be for	und at:				
http://www.onr.navy.mil/Contracts	-Grants/s	ubmit-proposal	/grants-proposa	l/grants-terms-conditions	.aspx
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30. OPTIONS OPTION NO.		AMOUNT		PERIOD	
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(4) 31, REPORTS: The following reports must be subm	illad to the in	licated addressees it	the indicated quantitie	es within 90 days following the expirat	on or termination of
the project. Final Technical Reports must have a SI	-298, Report (Documentation Page,	accompanying them. U	Inless otherwise stated in the award/m	odification, complete
Block 12a of the SF298 as follows: "Approved for P	ublic Release;	distribution is Unlimit	led".		
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See block #21 (Frequency)		Final Techni	ical Report wi	th SF298	1
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32. FOR THE RECIPIENT 32a. SIGNATURE OF PERSON AUTHORIZED TO	SIGN			AWARDING OFFICER	
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32b. NAME AND TITLE OF SIGNER	3:	2c, DATE SIGNED	33b. NAME AND TITL Ellen Simono	E OF AWARD OFFICER	33c. DATE SIGNED 29-OCT-10
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